EAST HORSLEY: LONG TERM TRAFFIC PROJECTIONS

1. INTRODUCTION

Surrey County Council ('SCC') have a computer model called SINTRAM which simulates traffic flows across Surrey, covering all the main roads in the county. The model's base year is 2014, which uses actual measured data, then projects forward to 2034 with traffic projections being adjusted for a wide range of demographic and economic inputs including population growth, new housing developments and new highways works programmes which themselves may well influence predicted traffic flows. Data is also available for the interim year of 2024.

East Horsley Parish Council ('EHPC') has obtained data extracts covering the main East Horsley roads, given in the Appendix below, with a summary of the results presented in this paper.

SINTRAM is widely used by local authorities for preparing Local Plans and Transport Assessments for new developments. SINTRAM outputs are presented in different scenarios, including the extent and timing of new developments. In this paper we have used those scenarios likely to be most realistic for East Horsley, namely 'Scenario 2' for the 2024 data, which includes all Local Plan and Land Availability Assessment (LAA) sites expected by 2024, and 'Scenario 5' for 2034 which is based upon Local Plan and LAA sites plus traffic mitigation measures such as the M25/A3 improvement scheme and the Burnt Common slips on the A3. Further details are shown in the Appendix.

Guidance received from SCC suggests the 2014 base year data is now increasingly seen as out-of-date and not necessarily a good indicator of current conditions. However, the relative changes in traffic flows projected between 2024 and 2034 are still considered reliable, since the model is continually being updated for the timing and scale of anticipated housing developments as new Local Plans come into effect.

SINTRAM does not provide any accompanying explanation as to why traffic changes may arise – the algorithms are too complex for that. It is up to the user to try and infer.

This paper is divided into three sections. Section 3 shows overall traffic volumes projected for the main East Horsley roads, Section 4 shows traffic volumes in each direction, whilst Section 5 gives projected flows at the main East Horsley junctions during the AM and PM peak hours.

2. KEY FINDINGS

a) *Total traffic flows through the Station Parade village centre are expected to increase by two-thirds over the period 2024 to 2034, a period which coincides with the development of Wisley airfield and junction enhancements on the A3;*

b) *The T-junctions of Ockham Road South/A246 and Ockham Road North/East Lane are likely to experience severe traffic congestion. Mitigation in the form of a roundabout or traffic lights should be assessed for each junction.*

3. OVERALL TRAFFIC FLOWS

The SINTRAM model provides projections for average daily traffic flows for the main roads in the Surrey network. Data extracts for East Horsley are summarised in Table 1 below for the 2014 base year, the 2024 interim year and the final year of 2034, together with the percentage changes in traffic volumes over the 2024-34 period:

TABLE 1: EAST HORSLEY AVERAGE DAILY TRAFFIC VOLUMES, 2014 – 2034

	Total traffic volumes, daily averages in numbers of vehicles			
ROADS:	**2014**	**2024**	**2034**	***% change 2024-34***
Ockham Road North (by The Drift)	3,692	4,874	6,558	*35%*
Ockham Road South (by Station Parade)	4,006	3,766	6,297	*67%*
Ockham Road South (Bishopsmead Parade)	4,864	6,255	7,929	*27%*
Forest Road (by Nightingale Road)	3,525	2,667	2,615	*-2%*
East Lane, (at ORN end)	3,284	3,556	2,772	*-22%*

Highlights:

- A 67% increase in total traffic volumes through the main village centre at Station Parade;
- No overall change in Forest Road daily traffic volumes, although there are significant directional shifts, as discussed in Section 3 below;
- A 22% reduction in East Lane daily traffic volumes – the reasons are not self-evident, possibly SINTRAM is predicting drivers will re-route in order to avoid traffic congestion at this junction.

4. TWO-WAY TRAFFIC VOLUMES

Table 2 below gives a break-down of overall average traffic volumes according to the direction of flow:

TABLE 2: EAST HORSLEY DIRECTIONAL TRAFFIC VOLUMES, 2014 – 2034

		Each-way traffic volumes, daily averages in numbers of vehicles			
ROADS:		**2014**	**2024**	**2034**	***% change 2024-34***
Ockham Road North (The Drift):	Northbound	2,374	2,720	3,985	47%
	Southbound	1,318	2,155	2,573	19%
ORS (Station Parade)	Northbound	2,772	2,406	3,713	54%
	Southbound	1,234	1,360	2,584	90%
ORS (Bishopsmead Parade)	Northbound	3,274	2,971	3,515	18%
	Southbound	1,590	3,284	4,414	34%
Forest Road (by Nightingale Rd)	Northbound	1,695	1,412	879	-38%
	Southbound	1,831	1,255	1,736	38%
East Lane, ORN end	Eastbound	1,872	1,590	1,077	-32%
	Westbound	1,412	1,966	1,695	-14%

Highlights:

- The increases in traffic flows through Station Parade are more pronounced in the southbound direction heading towards the A246 (+90%), compared to the northbound flow towards Ockham and the A3 (+54%);

- Forest Road traffic flows show a 38% increase in southbound flows, which is directly matched by a 38% decrease in northbound flows. It seems SINTRAM may be predicting some traffic re-routing, perhaps as a consequence of highway changes such as the M25/A3 improvement scheme and Burnt Common slip roads, which are impacting through-traffic routes;

- There is a projected increase in southbound traffic volumes along Ockham Road South through Bishopsmead Parade of 34%, with potential consequences for the A246 T-junction, as discussed further in Section 5 below.

5. JUNCTION FLOWS

SINTRAM provides a projection of traffic flows at key junctions, data which is used by highways planners to identify potential points of traffic congestion. In this section, SINTRAM projections are shown for four key junctions within the East Horsley road network. The data is presented in terms of AM and PM hourly flows, measured in terms of 'vehicles per hour' or 'vph'. Both directions of flow are given for each of the roads comprising the junction.

a) Guildford Road A246 with Ockham Road South B2039

The projected AM and PM peak hour traffic flows through the junction of Ockham Road South and the A246, beside the Duke of Wellington pub, are shown in Table 3(a) below:

TABLE 3(a) Junction peak hour flows: A246/B2039

		AM Peak flows			*% change*		PM Peak flows			*% change*
Junction roads	***Direction***	**2014**	**2024**	**2034**	***2024-34***		**2014**	**2024**	**2034**	***2024-34***
A246 Guildford Road (East)	*East*	517	627	631	*1%*		531	468	593	*27%*
	West	795	1082	968	*-11%*		124	332	564	*70%*
Ockham Road South	*North*	313	284	336	*18%*		124	294	192	*-35%*
	South	152	314	422	*34%*		123	141	268	*90%*
A246 Guildford Road (West)	*East*	619	757	890	*18%*		632	704	724	*3%*
	West	1057	1241	1313	*6%*		775	415	771	*86%*

Highlights:

- SINTRAM projects a 34% increase in the AM peak flows joining the A246 from East Horsley and a 90% increase in the similar PM peak flows. Although volume numbers are not unduly high, this junction is already subject to significant traffic queuing during the AM peak, which is likely to be further exacerbated by these projections. PM peak queuing appears likely to become a more regular feature here also.

- There are significant increases in traffic volumes on the A246 approaching this junction (eg. a 70% increase in the PM peak flows approaching this junction from the east and an 18% increase in AM peak flows heading from the east). In consequence it is likely that joining the A246 from the B2039 will become increasingly difficult, thus lengthening the traffic queuing even further back along Ockham Road South.

- These SINTRAM projections suggest a detailed queuing assessment should be undertaken for this T-junction to assess whether mitigation measures (such as a roundabout or traffic lights) should be introduced here.

b) Forest Road with Ockham Road South B2039

The projected AM and PM peak hour traffic flows though the junction of Forest Road with Ockham Road South – also known as the 'Triangle' - are given in Table 3(b) below:

TABLE 3(b) Junction peak hour flows: B2039/Forest Road

		AM Peak flows			% change	PM Peak flows			% change
Junction roads	***Direction***	**2014**	**2024**	**2034**	***2024-34***	**2014**	**2024**	**2034**	***2024-34***
B2039 ORS (North)	*North*	265	230	355	*54%*	91	130	247	*91%*
	South	118	218	242	*11%*	125	256	155	*-39%*
Forest Road	*North*	162	56	19	*-66%*	155	19	19	*4%*
	South	175	32	65	*104%*	97	29	20	*-31%*
B2039 ORS (South)	*North*	426	285	374	*31%*	245	148	267	*80%*
	South	296	249	306	*23%*	221	285	175	*-39%*

Highlights:

- The flows through this junction are dominated by the traffic driving along Ockham Road South, with the flows into and out of the Forest Road spur being much more modest in scale.

- Peak hour traffic heading north along Ockham Road South from this junction shows a 54% increase in the AM peak and a 91% increase in the PM peak. This is partly reversed in the afternoons where there is a 39% reduction in southbound flows heading towards the A246, although the northbound flows still grow by 80%, albeit from a low base.

- The Forest Road flows show a distinct shift in directional flows between the AM and PM peaks. In the mornings the southbound flow is increased whilst the northbound is reduced, presumably a reflection of some re-routing in traffic flows.

- Overall, this junction sees increasing traffic flows throughout the two peak hours, but given that the majority of this volume is 'straight-through' traffic along the B2039, there is no indication that the flow of traffic through the T-junction into Forest Road may necessarily cause significant traffic congestion. Traffic accidents statistics may, of course, paint a different picture.

c) East Lane with B2039 Ockham Road North

The projected AM and PM peak hour traffic flows though the T-junction of East Lane with Ockham Road North are shown in Table 3(c) below:

TABLE 3(c) Junction peak hour flows: ORN B2039/East Lane

		AM Peak flows			% change		PM Peak flows			% change
Junction roads	***Direction***	**2014**	**2024**	**2034**	***2024-34***		**2014**	**2024**	**2034**	***2024-34***
Ockham Road North (north)	*North*	417	304	323	*6%*		203	306	213	*-30%*
	South	211	306	391	*28%*		273	158	281	*78%*
East Lane	*East*	179	152	103	*-32%*		123	72	84	*17%*
	West	135	188	162	*-14%*		137	66	87	*32%*
Ockham Road North (south)	*North*	287	248	371	*50%*		87	121	239	*98%*
	South	125	211	244	*16%*		142	275	168	*-39%*

Highlights are:

- Flows into this T-junction from both directions of Ockham Road North increase significantly during the peak periods, a reflection of the general increase in traffic volumes along the B2039 projected over the 2024-34 period.

- Traffic approaching the T-junction along the B2039 from the north increases by 28% in the AM peak and by 78% in the PM peak; traffic approaching the junction from the south increases by 50% in the AM peak and by 98% in the PM peak.

- Currently this junction experiences significant traffic queuing back along East Lane during both the AM and PM peak periods. With increases in traffic flowing along the B2039 on the scale being projected by SINTRAM, it will become increasingly difficult for traffic to exit from East Lane on to the B2039 in either direction but particular the right turn to the south. The eastbound traffic volumes in East Lane are actually expected to be lower overall with daily volumes projected to fall by 22% by 2034 (Table 1). However, the peak hours show a mixed trend with a fall of 32% in the AM peak and a rise of 17% in the PM peak. As suggested earlier this trend may possibly be a reflection of SINTRAM adjusting for traffic congestion.

- Given that the East Lane T-junction is the main route for the majority of West Horsley residents to access the Station Parade District Centre, traffic congestion here has material adverse consequences for many residents. A detailed queuing assessment is therefore suggested for this T-junction in order to properly assess whether mitigation measures are required, either in the form of a roundabout (if space permits) or by traffic lights.

d) Effingham Junction staggered-T junction

TABLE 3(d) Junction peak hour flows: Effingham Junction staggered T-junction

		AM Peak flows			% change		PM Peak flows			% change
Junction roads	***Direction***	**2014**	**2024**	**2034**	***2024-34***		**2014**	**2024**	**2034**	***2024-34***
Horsley Road	*North*	444	380	286	*-25%*		167	95	100	*6%*
	South	234	179	127	*-29%*		289	275	398	*45%*
Old Lane	*North*	188	145	225	*55%*		139	66	35	*-48%*
	South	159	207	62	*-70%*		153	149	78	*-48%*
Horsley Road (mid-stagger)	*North*	616	487	479	*-2%*		283	133	105	*-21%*
	South	377	348	156	*-55%*		419	397	446	*12%*
Howard Road	*North*	476	393	451	*15%*		278	111	75	*-32%*
	South	364	270	47	*-83%*		451	342	374	*9%*
Forest Road	*North*	388	135	84	*-38%*		289	41	56	*37%*
	South	262	120	166	*38%*		252	73	98	*34%*

Highlights:

- Today this staggered T-junction is subject to significant traffic congestion during the AM peak period, with vehicles queuing along Howard Road tailing back towards Effingham. SINTRAM is projecting a 15% increase in northbound flows along Howard Road in the AM peak which would contribute to further queuing here. Southbound AM peak flows are sharply reduced (by 83%) for reasons which are not entirely clear, although it may be a consequence of the A3/M25 and Burnt Common slip roads taking through-traffic on a different route.

- The traffic changes projected for Old Lane are particularly marked with a 50% increase in northbound flows at the AM peak but a 48% fall in the PM peak. Southbound flows are significantly reduced too - by 70% in the AM peak and by 48% in the PM peak. Given that Old Lane represents one of the two main connecting routes from the new settlement at Wisley airfield south towards East Horsley/Effingham/Bookham, such a large reduction is rather counter-intuitive. Future A3 highways changes may cause some re-routing of traffic, but SINTRAM assumptions on travel modes from the new Wisley site may also be relevant.

- Overall, the pattern of traffic flows at this staggered T-junction appears complex. However, since a new roundabout is due to be constructed here shortly as part of the s106 agreement agreed with the Berkeley Homes in connection with the Howard of Effingham School development, it is hoped that the issue of traffic queuing back along Howard Lane will be appropriately mitigated, together with other traffic movements through the new roundabout.

6. CONCLUSION

SINTRAM is sometimes criticised for generating traffic projections which appear inexplicable or counter-intuitive and indeed there are several instances in the outputs summarised here which fall into those categories.

However, in terms of the broader pattern of traffic flows which emerges, the SINTRAM projections for East Horsley appear all too plausible. For instance, the projected increase in traffic volumes through the Station Parade centre of some 67% over the 10 years 2024-34 is entirely consistent with our estimate for population growth of 70% within a radius of 2.5 miles around Horsley Station during this period.

The junction analyses shown here also highlight the need for a more detailed assessment of queuing at two key T-junctions in the village, namely the A246/Ockham Road South junction beside the Duke of Wellington and the East Lane junction with Ockham Road North. The appropriate mitigation of such impacts, whether through the introduction of a roundabout, traffic lights or other means, may then be determined.

East Horsley Parish Council
January 2021

APPENDIX: SINTRAM DATA EXTRACTS FOR EAST HORSLEY:

Source: Surrey County Council

a) **Modelling scenarios assumed**

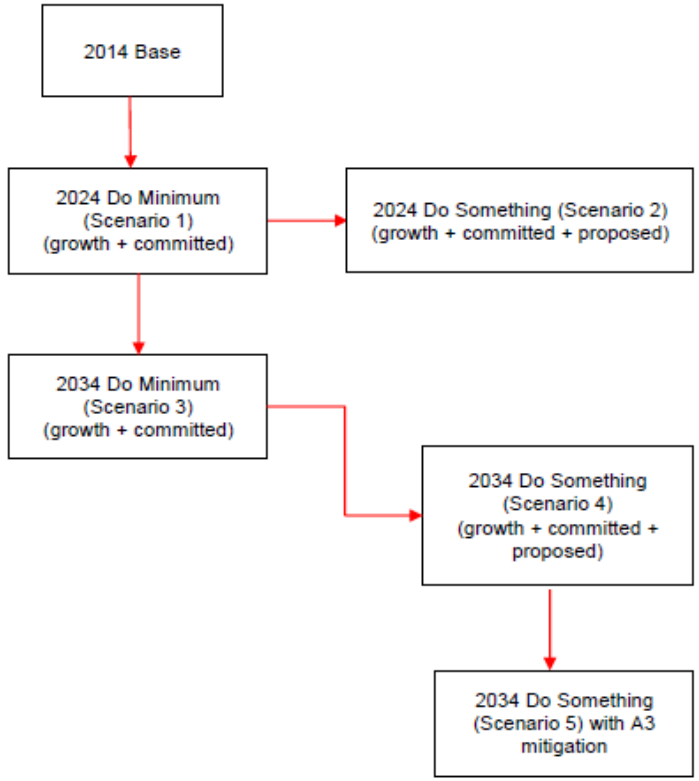
b) **Table with extracts of SINTRAM outputs for key roads & junctions in East Horsley**

Scenarios

Base = 2014

Forecast Scenarios

- Scenario 1: 2024 Do Minimum. This scenario includes committed developments identified from the base year (since 2014) to the interim forecast year 2024, where committed developments comprise sites already built, or in the process of construction, or have planning permission. It also includes Land Availability Assessment (LAA) opportunity sites to 2024.
- Scenario 2: 2024 Do Something. This scenario is a continuation of Scenario 1 plus the proposed Local Plan sites to 2024.
- Scenario 3: 2034 Do Minimum. This scenario is also a continuation of Scenario 1 plus the Land Availability Assessment (LAA) opportunity sites to 2034.
- Scenario 4: 2034 Do Something. This scenario is a continuation of scenario 3 plus all proposed Local Plan sites to 2034.
- Scenario 5: 2034 Mitigation. This scenario replicates scenario 4 but includes mitigation measures on the A3.



model

GU_Forecast_Subarea_Project_210319 corrected

CE model developped 2017

Link flows				CE model											
	Direction	Description	link no	2014 AM	2014 PM	2024 DM AM	2024 DM PM	2024 DS AM	2024 DS PM	2034 DM AM	2034 DM PM	2034 DS AM	2034 DS PM	2034 DS Mit AM	2034 DS Mit PM
Ockham Road North (B2039)	NB	Between The Drift and Ockham Drive	75063, 1	227	81	200	163	260	130	131	117	385	275	381	272
	SB		75063, 2	126	140	192	291	206	270	189	208	227	168	246	169
Ockham Road South (B2039)	NB	Between Glendene Ave and Forest Road	114280, 1	265	91	210	158	230	130	147	120	356	251	355	247
	SB		114280, 2	118	125	191	274	218	256	189	208	225	154	242	155
Forest Road	NB	Between Ockham Road South and Nightingale Road	320207, 1	162	155	42	19	56	19	72	14	19	22	19	19
	SB		320207, 2	175	97	28	22	32	29	36	23	68	20	65	20
Junctions															
Ockham Road North (B2039) (north)	NB	B2039 Ockham Road North/East Lane	203123, 2	417	203	280	321	304	306	313	242	311	217	323	213
	SB		203123, 1	211	273	233	195	306	158	173	148	408	286	391	281
East Lane	EB		320212, 2	179	123	82	85	152	72	95	68	121	86	103	84
	WB		320212, 1	135	137	165	73	188	66	216	48	169	93	162	87
Ockham Road North (B2039) (south)	NB		75066, 1	287	87	227	149	248	121	166	112	372	242	371	239
	SB		75066, 2	125	142	192	288	211	275	185	226	227	167	244	168
B2039 Ockham Road South (north)	NB	B2039 Ockham Road South/Forest Road	114280, 1	265	91	210	158	230	130	147	120	356	251	355	247
	SB		114280, 2	118	125	191	274	218	256	189	208	225	154	242	155
Forest Road	NB		320207, 1	162	155	42	19	56	19	72	14	19	22	19	19
	SB		320207, 2	175	97	28	22	32	29	36	23	68	20	65	20
B2039 Ockham Road South (south)	NB		85900, 1	426	245	251	178	285	148	219	134	375	273	374	267
	SB		85900, 2	296	221	218	296	249	285	225	231	293	174	306	175
A246 Guildford Road (east)	EB	B2039 Ockham Road South/A246	320222, 2	517	531	627	598	627	468	725	496	694	582	631	593
	WB		320222, 1	795	124	1094	432	1082	332	1062	394	1100	589	968	564
B2039 Ockham Road South	NB		306557, 2	313	124	244	311	284	294	248	250	325	190	336	192
	SB		306557, 1	152	123	298	173	314	141	256	131	426	274	422	268
A246 Guildford Road (west)	EB		161819, 2	619	632	763	828	757	704	838	691	944	711	890	724
	WB		161819, 1	1057	775	1284	524	1241	415	1183	470	1451	802	1313	771
Horsley Road	NB	Old Lane/Horsley Road (in Effingham Junction) & Forest Road/Howard Road	71490, 1	444	167	294	152	380	95	380	99	342	101	286	100
	SB		71490, 2	234	289	157	298	179	275	230	305	161	424	127	398
Old Lane	NB		267134, 1	188	139	159	71	145	66	202	66	198	36	225	35
	SB		267134, 2	159	153	185	140	207	149	193	125	62	78	62	78
Horsley Road (middle of Stagger)	NB		161910, 1	616	283	417	187	487	133	541	137	504	108	479	105
	SB		161910, 2	377	419	306	402	348	397	383	403	188	472	156	446
Howard Road	NB		279607, 2	476	278	355	150	393	111	435	110	452	75	451	75
	SB		279607, 1	364	451	238	354	270	342	270	351	58	396	47	374
Forest Road	NB		203128, 2	388	289	103	54	135	41	153	43	101	60	84	56
	SB		203128, 1	262	252	109	65	120	73	159	68	180	103	166	98